Gender dysphoria in adolescent population : A 5-year replication study

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Abstract

The aim of this study was to explore whether there has been an increase in prevalence and changes in sex ratio in feelings of gender dysphoria (GD) in an adolescent population in Northern Europe, and to study the impact of invalid responding on this topic. We replicated an earlier survey among junior high school students in Tampere, Finland. All first and second year students, aged 16–18, in the participating schools were invited to respond to an anonymous classroom survey on gender experience during the 2012–2013 school year and in the spring and autumn terms of 2017. Gender identity/GD was measured using the GIDYQ-A. A total of 318 male and 401 female youth participated in 2012–2013, and 326 male and 701 female youth in 2017. In the earlier survey, the GIDYQ-A scores, both among males and females, were strongly skewed toward a cis-gender experience with very narrow interquartile ranges. Of males, 2.2%, and of females, 0.5% nevertheless reported possibly clinically significant GD. The 2017 GIDYQ-A distribution was similarly skewed. The proportion of those reporting potentially clinically significant GD was 3.6% among males and 2.3% among females. Validity screening proved to have a considerable impact on conclusions. GD seems to have increased in prevalence in the adolescent population.

Keywords

Gender dysphoria, adolescence, prevalence, research methodology, transgender identity

Gender Dysphoria (GD) refers to a condition in which an individual senses a marked discrepancy between the expressed or experienced gender and the assigned gender at birth, causing clinically significant distress or impairment in important areas of functioning (*Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. (DSM-5); American Psychiatric Association, 2013). Individuals

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Table 1. Number of new referrals to one of the two child and adolescent gender identity services in Finland 2011*–2017.

2011	14
2012	18
2013	20
2014	24
2015	37
2016	95
2017	81

*The service was first opened in January 2011.

with GD often experience a strong desire to be treated as the other gender (or some gender other than their assigned gender at birth) and/or to be rid of their sexual characteristics. They may likewise experience a strong conviction of having feelings and reactions typical of the other gender (or some alternative gender). Transsexualism (ICD-10; World Health Organization, 1992) refers to a persistent desire to live and be accepted as a member of the opposite sex. This is usually accompanied by a sense of discomfort or inappropriateness regarding one's anatomical sex and a wish to undergo surgery and hormonal treatment to make the body congruent with the preferred sex. In addition to the DSM-5 diagnostic term, GD can refer to anxiety and distress about gender features in general. Gender variance refers to a spectrum of gender experience and gender role behavior as opposed to the dichotomized conception of gender (Gray, Carter, & Levitt, 2012). The term "transgender" is used as an umbrella term to refer to a variety of gender identities incongruent with one's biological sex (Collin, Reisner, Tangpricha, & Goodman, 2016). A transgender identity does not necessarily presuppose GD.

The number of adolescents contacting specialized gender identity services has risen considerably over the past decade across Europe and North America (Aitken et al., 2015; Wood et al., 2013). In Finland, the current number of new referrals exceeds by about five-fold the figure in 2011, when adolescent gender identity services first became available in the country (Table 1). However, it is not known to what extent treatment-seeking figures and changes in these reflect the prevalence of GD in the population, and possible changes therein. To the best of our knowledge, state of the art epidemiological studies on the prevalence of GD or Transsexualism in the general adolescent population have not been carried out. A few adolescent population-based surveys suggest that 0.17–2.7% of adolescents and young adults identify as transgender (Clark et al., 2014; Connolly, Zervos, Barone, Johnson, & Joseph, 2016; Diemer, Grant, Munn-Chernoff, Patterson, & Duncan, 2015; Eisenberg et al., 2017; Kaltiala-Heino, Bergman, Työläjärvi, & Frisén, 2018; Reisner et al., 2014; Shields et al., 2013). All these findings are recent and do not allow for speculation about changes over time. In addition, transgender identity is not synonymous with GD (Collin et al., 2016; Zucker, 2017). An earlier study in Finland found in data collected using the Gender Identity/Gender Dysphoria Questionnaire for Adolescents and Adults (GIDYQ-A) (Deogracias et al., 2007) that among 16– to 18–year-old junior high school students, 2.2% of the males (95% confidence interval (CI)=[0.6%, 3.8%]) and 0.5% of the females (95% CI=[–0.2%, 1.2%]) reported experiences indicative of potentially clinically significant GD (Sumia, Lindberg, Työläjärvi, & Kaltiala-Heino, 2017). The data were from the academic year 2012–2013. Given the sharp increase in the number of adolescents seeking sex reassignment (SR), we wanted to replicate the survey to determine possible changes in adolescents' gender experience in the population.

With the increase in numbers of adolescents seeking SR, there has been a shift from a birth sex ratio dominated by natal males to a preponderance of natal females in the referred samples

(Aitken et al., 2015; Wood et al., 2013). The reasons for this change are not known. Some population studies on transgender identity have also presented prevalence figures separately for natal boys and girls. In the study by Reisner et al. (2014), the prevalence of non-cisgender identity was 0.38% in natal males and 0.31% in natal females, yielding a M:F (male:female) ratio of 1.22:1. In Eisenberg et al. (2017), transgender identity was more prevalent among natal females (3.6%) than among natal males (1.7%) (F:M ratio 2.12:1). In the abovementioned study from Finland (Sumia et al., 2017), M:F birth sex ratio among those reporting potentially clinically significant GD was 4.4:1.

Invalid responding is a methodological problem not much addressed in gender identity research. It has been demonstrated that a subset of adolescents deliberately mispresent themselves in survey studies, exaggerating their belonging to minorities as well as their problem behaviors and symptoms, presumably because they find it "funny" (Cornell, Klein, Konold, & Huang, 2012; Fan et al., 2006; Robinson-Cimpian, 2014). Thus, according to survey data, the proportion of those belonging to special groups such as adoptees, immigrants, non-heterosexual youth, or persons with disabilities, as well as the prevalence of psychosocial problems among youth belonging to those groups tend to be overestimated. A validity screening question has been suggested to be a simple method for improving data quality in adolescent surveys (Cornell et al., 2012; Fan et al., 2006). Non-cisgender gender identity and GD may well be topics susceptible to such invalid responses. As invalid responses may cause wildly incorrect conclusions (Cornell et al., 2012; Fan et al., 2006; Robinson-Cimpian, 2014), it is important to study possible invalid responding.

As the number of adolescents seeking treatment for GD increases, it is interesting to explore whether feelings of GD have also increased at a population level. Knowledge of population-level developments is important and can be helpful for health care planning. The aim of this study is to explore whether there has been an increase in the prevalence of feelings of GD in adolescent population, given the increasing number of individuals assigned female at birth among those seeking treatment. We also aim to ascertain if any changes have occurred in sex ratio among those reporting features of GD among the adolescent population. A third aim is to study the risk and impact of invalid responding in a study focusing on adolescent GD. We hypothesize that, given the extensive traditional and social media coverage of topics related to transgender identity, GD and gender reassignment, and the documented increase in the number of referrals of adolescents to gender identity services, observed among Western countries (Aitken et al., 2015; Kaltiala-Heino et al., 2018; Marchiano, 2017; Wood et al., 2013), the proportion of adolescents reporting GD will have increased from 2012 to 2017. We also expect to see that the prevalence of those reporting potentially clinically significant GD will decrease when invalid responders are excluded from the analysis.

Methods

Procedure

First and second year students from a convenience sample of junior high schools in the city of Tampere, Finland (population 230,000) were recruited, in the autumn term of 2012 and spring term of 2013, to respond anonymously to a classroom questionnaire on GD. The same survey was administered to a similar group of students in the spring term of 2017 and the autumn term of 2017. Three junior high schools participated in 2012–2013 and four in 2017. All the pupils who were present on the survey day were invited to participate. The survey was conducted in a classroom under the supervision of a teacher. In the earlier wave, the students responded to a paper-and-pen survey that was returned in a sealed envelope, and in the latter, to an Internet survey. The supervising teacher ensured that all pupils had the privacy to respond but did not interfere with the process.

Prior to taking the survey, the students were informed both orally and in written form about the anonymity and voluntary nature of participation and their option of not completing the survey or of stopping at any time if they were unwilling to participate. Consent to participate was indicated by returning the completed paper survey in the sealed envelope or pressing the completed button in the Internet survey. To ensure anonymity, no identifying data were collected in either the paper or electronic format. The study was approved by the Helsinki University Hospital Ethics Committee and the Tampere school administration. In total, 401 female and 318 male youth responded to the earlier survey, and 701 females and 326 males to the later survey.

Measures

The Gender Identity/Gender Dysphoria Questionnaire for adolescents (GIDYQ-A; Deogracias et al., 2007) was used. The GIDYQ-A includes 27 items on gender identity/dysphoria experienced during the past 12 months. Each item is rated on a 5-point scale and the mean of all items forms a GIDYQ-A total score ranging from one to five. A score of 5 indicates cis-gender experience on each item and in the total score. Total GIDYQ-A scores <3.0 suggest clinically significant GD. GIDYQ-A distribution was strongly skewed. In the present data, Cronbach's alphas for GIDYQ-A among male youth were .95 in the earlier and .94 in the later sample, and among female youth, .90 and .93, respectively.

The GIDYQ-A item formulations elicit experiences in relation to the respondent's sex (biological, male, or female). Thus, the questionnaire has separate versions for each of the two sexes, but with parallel items (Deogracias et al., 2007). Those who responded as males and thus considered all items in relation to being of male sex are in this article called male youth or males, and those who responded as females and thus considered all items in relation to being of female sex are in this article called female youth or females.

The respondents in the first wave were asked to report their exact age in years and months. They had a mean (SD) age of 17.1 (0.87) years. Unfortunately, information on age was not elicited in the second survey. However, the age distribution in Finnish 3-year junior high schools is narrow (16–19 years) and has remained stable over the years (http://www.stat.fi/til/opiskt/2012/opiskt_2012_2014-01-29_kat_001_fi.html). Thus, it can be assumed that junior high school students in a given academic year are on average as old as students in another academic year. Based on the months during which data were collected (December and January in the first wave and October and May in second), it can be calculated that the respondents in the latter group were on average about 1.9 months older than those in the earlier group. Age was not associated with experience of gender in the earlier sample (Sumia et al., 2017), thus the risk of bias due to missing age information appears minimal.

Attrition

In the earlier survey, all forms that were returned were complete. In the later survey, seven male and six female youth had logged into the survey but had not responded to any of the GIDYQ-A items.

The proportion of those omitting to answer some of the GIDYQ-A items increased in the later survey. Among male youth, the proportions of missing responses to the 27 items varied from none to 4.7% in the earlier sample and from 0.9% to 7.7% in the later sample. Among females, the proportions of missing items varied from none to 3.2% and from 1.1% to 3.7% correspondingly.

Statistical analyses

Medians with interquartile ranges are presented for GIDYQ-A total score for male and female youth in the earlier and the later sample. Proportions of those scoring <3, suggesting potentially clinically significant GD, and of those scoring 5 (totally cis-gender on all items) are given. Comparisons are made between males in the earlier and later sample, and between females in the earlier and the later sample. Proportions are compared using cross-tabulations with chi-square statistics/Fisher's exact test where appropriate.

Results

At both time points, GIDYQ-A total scores were strongly skewed toward cis-gender experience with little variation. GIDYQ-A medians were 4.9 for both male and female youth in both the earlier and the later sample. Interquartile ranges were narrow (0.2–0.3 points) and overlapping between earlier and later samples among both sexes. There was no statistical difference in the prevalence of those scoring 5 on all items in either sex between the earlier and later sample (Table 2).

In 2012–2013, 2.2% and 0.5% of male and female youth, respectively, scored <3 on GIDYQ-A and in 2017, 7.1% and 3.6% correspondingly (Table 2). This gives a M:F ratio of 4.4:1 in the earlier and 1.97:1 in the latter time point.

In the 2017 sample, 85.2% of the males reported that they had responded to the survey as honestly as possible, 1.5% stated they had not answered honestly, and 12.3% had omitted the honesty question. Among the females, the corresponding proportions were 85.0%, 0.6%, and 14.4%. Of those males who reported responding honestly, 3.6% scored <3 on GIDYQ-A, and of females, 2.3%. Among those who admitted not responding honestly as well as among those who had not answered the honesty question, the proportions of those with scores suggesting significant GD were many times greater (Table 3). The proportions corrected for invalid responding yield an M:F ratio of 1.57:1.

Discussion

Although the medians and interquartile ranges of the GIDYQ-A total score has not changed between the two data collection points, separated by a 5-year interval, the proportion of those reporting possibly clinically significant GD had increased. Furthermore, the proportion of those reporting absolutely cis-gender experience on all items showed a downward trend, although this change was not statistically significant. Moreover, when we considered only those reporting that they had responded as honestly as possible, the prevalences found were higher than 5 years earlier. Taken together, this suggests that feelings of GD have increased in the adolescent population in Finland.

Possibly clinically significant GD was more common in this sample than transgender self-identification in other adolescent populations (Connolly et al., 2016; Kaltiala-Heino et al., 2018), except for the most recent findings (Eisenberg et al., 2017), where the proportion of natal girls self-identifying as transgender was higher than in the present data. The proportions of those reporting possibly clinically significant GD also exceeded figures found among a mainly adult sample (15–70 years) in the Netherlands, where 0.6% of men and 0.2% of women reported incongruent gender identity and a desire to undergo SR (Kuyper & Wijsen, 2014). Altogether, our findings suggest that GD may be more common in younger age cohorts than among older people, and may be increasing among adolescents in Finland.

Table 2. Changes in GIDYQ-A total score responses from 2012-13 to 2017 among Finnish junior high school students.

	Boys		*p*	Girls		*p*
	earlier *n* = 318	later *n* = 326		earlier *n* = 401	later *n* = 701	
Median (interquartile range)	4.9 (4.8–5.0)	4.9 (4.7–5.0)		4.9 (4.7–5.0)	4.9 (4.8–5.0)	
Prevalence score < 3	2.2%	7.1%	0.003	0.5%	3.6%	0.002
Prevalence score = 5	42.8%	37.4%	0.17	29.4%	25.1%	0.12

Table 3. Possibly clinically significant gender dysphoria according to whether the respondents (in the 2017 survey) reported honesty in responding. (%).

	Boys[a] *n* = 326	Girls[a] *n* = 701
I have answered honestly	3.6	2.3
I have not answered honestly	33.0	–
Skipped honesty question	27.5	10.9

[a]Differences between honesty groups are statistically significant with $p < .001$.

Over the past decade, there has been a shift in the sex ratio among gender-referred adolescents from a preponderance of natal boys to an overrepresentation of natal girls (Aitken et al., 2015; Wood et al., 2013). The few population studies on transgender identity among adolescents have yielded contradictory results regarding sex ratio (Eisenberg et al., 2017; Reisner et al., 2014). In our study, possibly clinically significant GD was more commonly found among male youth in both waves, which is contradictory to the fact that in Finnish adolescent gender identity services, a vast natal girl overrepresentation—about 90% of referrals concerning natal girls—has been observed (Kaltiala-Heino et al., 2018; Kaltiala-Heino et al., 2015). The reasons for this contradiction are not known.

Validity screening is a novel approach in GD research. Social desirability has been recognized as a methodological problem resulting in the concealing of information perceived as stigmatizing in clinical encounters and research studies (D'Ancona, 2017). Anonymous survey studies appear to offer a forum to disclose sensitive information without such inhibition (D'Ancona, 2017), but particularly among adolescents, surveys have also been shown to be susceptible to exaggeration of such information (Robinson-Cimpian, 2014). The proportion of those who admitted to giving incorrect responses was low, but missing information on this item was decidedly common. Comparisons between those reporting responding honestly with those who were not honest and those omitting to answer the honesty question revealed first that among male youth, admitting incorrect responding was strongly associated with reporting GD as measured by the GIDYQ-A. Unfortunately, no validity screen was included in the earlier data. The prevalence of GD detected among males in the earlier data may also be an overestimation. However, not responding to the honesty question was likewise associated with vastly increased prevalence of GD. This may indicate that adolescents felt uneasy after mispresenting themselves when faced with the honesty question and chose to ignore it. However, it may also be that adolescents exaggerated their gender-related dissatisfaction due to assuming that such feelings are expected. GD has recently attracted extensive media coverage in Finland. Adolescents may perceive that they should problematize their gender, and this may influence their responses. When confronted with the validity question they perhaps nevertheless hesitated.

This, to the best of our knowledge, is the first study to shed light on possible changes in the prevalence of potentially clinically significant GD in an adolescent population. A strength of the study is the replicated administration of a clinically used measure in a population sample. There were more females in both samples, and the validity screen revealed fewer striking findings among females. Thus, the results may be more reliable for females. Lack of age information in the later sample is a limitation, but age was not a significant determinant of GD in the earlier sample (Sumia et al., 2017) and it is known that the age distribution in Finnish 3-year junior high schools is narrow (16–19 years) and has remained stable over the years (http://www.stat.fi/til/opiskt/2012/opiskt_2012_2014-01-29_kat_001_fi.html). A limitation is that vocational schools were not included. This suggests that the results may not be generalizable to adolescents with the lowest socioeconomic status (SES) (Sumia et al., 2017)

The GIDYQ-A, according to the original developers, is a dimensional measure that comprises 27 items pertaining to gender identity and GD, attempting to capture a range of subjective (13 items), social (9 items), somatic (3 items), and sociolegal (2 items) indicators of gender identity/GD (Deogracias et al., 2007). It is true that not all people experiencing non-cisgender identity experience GD, but in this measure the two were combined in to one dimension, and psychometric analyses supported this as a valid solution (Deogracias et al., 2007). The instrument is not a diagnostic measure of DSM-5 Gender Dysphoria, *DSM*-IV Gender Identity Disorder, ICD-10 Transsexualism, or ICD-11 Gender Incongruence. The GIDYQ-A questions are posed in relation to sex. It is most likely that the respondents were almost without exception in the situation that their juridical sex stated in their identity documents was in agreement with their sex assigned at birth. Juridical gender reassignment is in Finland only possible after reaching the age of majority (18 years), and by 2017, there were only a few individuals in the country who had changed their identity documents to the desired gender as early as age 18. Hence, the Finnish population will assume that "sex" elicited in all kinds of forms and surveys refers to juridical sex. However, it is not possible to ascertain whether someone who is a transfemale (assigned male with female gender identity) has chosen to respond as a female, or someone who is a transmale (assigned female with male gender identity) has chosen to respond as a male. This can be seen as a limitation in this study.

Conclusion

Even when only respondents specifically claiming to have responded honestly are considered, GD appears more common than it was 5 years earlier among Finnish junior high school students. It remains to be seen whether this signifies a vastly increased need for SR services. Adolescents' identity experiences are shaped by the surrounding society and extensive media coverage of topics related to transgender identity, GD, and gender reassignment may have an influence on how adolescents perceive themselves and their developmental distress.

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